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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,849	06/02/2004	Che-Li Lin	12920-US-PA	3848
31561 7590 05/16/2007 JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE 7 FLOOR-1, NO. 100 ROOSEVELT ROAD, SECTION 2 TAIPEI, 100 TAIWAN			EXAMINER MOON, SEOKYUN	
			ART UNIT 2629	PAPER NUMBER
			NOTIFICATION DATE 05/16/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/709,849	LIN, CHE-LI	
	Examiner	Art Unit	
	Seokyun Moon	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-17 is/are rejected.
- 7) ☒ Claim(s) 9 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. The Applicants have argued [Remarks: pg 3 lines 4-11] that “*power supply member 300*” of the device of Yoo is not a common voltage generating circuit, but is merely a common voltage applying member. The Applicants have further pointed out that the common voltage applying member receives the common voltage by an external source [Remarks: pg 3 lines 7-11].

The Applicants’ arguments regarding the claim limitation, “*a common voltage generating circuit*” disclosed in the claims 1 and 10 are persuasive and therefore the rejections of the claims 1 and 10 have been withdrawn. However, upon further consideration, the Examiner indicates a different component of the device of Yoo, as a common voltage generating circuit.

2. The Applicants have argued that the claim limitation, “*compensating, a common voltage output from each the adjustable common voltage generating circuit to make each the adjustable common voltage output from each the adjustable common voltage generating circuit the same or to make each the common voltage output to an ITO layer of a panel of the liquid crystal display the same, based on a common voltage adjustable data and a clock signal*” disclosed in claims 1 and 10 is not taught by Yoo or Lee.

However, Examiner respectfully submits that a key function of any common voltage generating circuit of liquid crystal displays is providing a common, i.e. same voltage to overall ITO layer of a panel of the displays. In other words, even though there might be common voltage drops across the overall ITO layer of the panels of the displays as disclosed in the background of the Application, any common voltage generating circuit of the displays is originally designed to produce a common voltage which are same across the overall ITO layer

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of the displays. Therefore, Examiner respectfully submits that the Applicants' arguments regarding the claim limitation are not persuasive.

Claim Objections

3. **Claims 1 and 10** are objected to because of the following informalities:

The claims contain a phrase, "*each the*".

For further examination purpose, it will be interpreted as "*each of the*" as best understood by the Examiner.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoo et al. (US 2004/0227895, herein after referred to as "Yoo") in view of Lee et al. (US 2004/0085371, herein after referred to as "Lee").

As to **claim 1**, Yoo [fig. 2] teaches a driving circuit (a combination of Yoo's gate drivers and source drivers) of a liquid crystal display, comprising:

a plurality of gate drivers, for selectively driving a plurality of thin film transistors of the liquid crystal display [par. (0052) lines 6-10];

a plurality of source drivers (a combination of data drivers and an external circuit providing common voltages to "*common voltage applying member*"), for receiving an image signal, the plurality of source drivers cooperating with the plurality of gate drivers to display an

image on the liquid crystal display, each of the plurality of source drivers further comprising a common voltage generating circuit (the external circuit providing common voltages to "*common voltage applying member*"), each of the common voltage generating circuit compensating a common voltage output from each of the common voltage generating circuit to make each of the common voltage output from each of the common voltage generating circuit the same or to make each of the common voltage output to an ITO layer of a panel of the liquid crystal display the same [par. (0054) lines 6-10].

Yoo further inherently teaches a timing sequence controller, for providing a control signal (a signal controlling Yoo's gate drivers) and a data flow (a signal controlling Yoo's data drivers) to the plurality of gate drivers and the plurality of source drivers since it is required for the device of Yoo to control the operation of the data drivers depending on the operation of the gate drivers so that the TFTs included in pixels of the display are turned on/off at appropriate timings to display images.

Yoo does not teach the common voltage generating circuit being capable of adjusting the outputted common voltage.

However, Lee [abstract] teaches a common voltage regulating circuit of a liquid crystal display from which the common voltages outputted are adjustable by software. Specifically, Lee [fig. 15] teaches the common voltage regulating circuit outputting the common voltages based on a common voltage adjustable data ("*SDA*") and a clock signal ("*SCL*") [par. (0091)].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yoo's common voltage generating circuit to be adjustable, as taught by Lee, in order to provide a method of re-adjusting the common voltages fed to pixels of the display without using variable resistor, thus to allow fine adjustment and to reduce the manufacturing cost of the display [pars. (0013)-(0015)].

As to **claim 2**, Yoo as modified by Lee teaches the adjustable common voltage generating circuit comprises [Lee: fig. 15]:

a digital interface (Lee: "*data storage section 500*"), for receiving the common voltage adjustable data (Lee: "*SDA*") and the clock signal (Lee: "*SCL*") [Lee: par. (0091)];

a digital to analog converter (Lee: "*D/A converter 502*"), coupled to the digital interface, for generating an analog signal based on the common voltage adjustable data (Lee: "*SDA*"); and

an output buffer (Lee: "*buffer amplifying section 504*"), coupled to the digital to analog converter, for generating the common voltage based on the analog signal to drive a load of the common voltage.

As to **claim 3**, Yoo as modified by Lee [Lee: fig. 15] teaches the digital interface comprises at least one of a serial digital interface (Lee: "*SDA*"), a parallel digital interface, a single-ended digital interface and a differential digital interface.

As to **claims 4 and 5**, Yoo as modified by Lee [Lee: fig. 15] teaches the adjustable common voltage generating circuit comprising a digital interface (Lee: "*data storage section 500*").

Yoo as modified by Lee does not expressly disclose the digital interface comprising a shift register or a latch.

However, Examiner takes official notice that it is well known in the art to use shift registers or latches to design and implement a digital data storage means.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the digital storage means of the device of Yoo as modified by Lee by using shift registers or latches since shift registers and latches are well known for providing dynamic storages with low manufacturing cost.

As to **claim 6**, Yoo as modified by Lee [Lee: fig. 15] teaches the output buffer (Lee: *"buffer amplifying section 504"*) to comprise an operational amplifier (Lee: *"buffer amplifier 504a"*).

As to **claim 7**, Yoo as modified by Lee teaches the timing sequence controller to comprise a timing sequence control unit for providing the control signal and the data flow (Yoo: as discussed with respect to the rejection of claim 1) and a common voltage adjustable data generating unit (Lee: means for generating *"SDA"*) for generating the common voltage adjustable data.

Yoo as modified by Lee inherently teaches the timing sequence control unit and the common voltage adjustable data generating unit being coupled since it is required for the device of Yoo as modified by Lee to output the common voltages depending on the timing of providing gate voltages and source voltage to pixels in order to turn on/off the TFTs included in the pixels, and thus to display images properly, and therefore, the timing sequence control unit and the common voltage adjustable data generating unit are required to be connected / coupled to each other in order to accomplish it.

As to **claim 8**, as discussed with respect to the rejection of claim 7, it is required for the display device of Yoo as modified by Lee to provide the control signal (the signals controlling the gate drivers of the device of Yoo as modified by Lee) and the data flow (the signals controlling the data drivers of the device of Yoo as modified by Lee) in accordance with the timings of outputting the common voltage adjustable data since it is required for the device of Yoo as modified by Lee to provide the three driving signals (gate driving signals, source driving signals, and common electrode driving signals) in specific timings in order to turn on/off the TFTs included in pixels of the display in appropriate timings, thus to display images properly. Therefore, it is inherent for the device of Yoo as modified by Lee to specify the operational

sequence of the common voltage adjustable data generating unit (Lee: means for generating "SDA") being controlled by the timing generating unit (Lee: means for generating the signals for controlling the gate drivers and the source drivers).

6. **Claims 10-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoo and Lee as applied to claims 1-8 above, and further in view of Kim (US 2004/0113881).

As to **claim 10**, all of the claim limitations have already been discussed with respect to the rejection of claim 1 except for each of the plurality of the gate drivers comprising the adjustable common voltage generating circuit.

Yoo as modified by Lee does not teach each of the plurality of the gate drivers to include a common voltage generating circuit.

However, Kim [fig. 6] teaches a liquid crystal display adopting a method of supplying common voltages (" V_{com} ") to display panel from gate printed circuits ("68") [abstract lines 7-10] and source printed circuits [abstract lines 4-7].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Yoo as modified by Lee to include the adjustable common voltage generating circuits in each of the plural gate drivers of the device of Yoo as modified by Lee so that the common voltages are outputted from both of the plural gate drivers and the plural source drivers, as taught by Kim, in order to distribute the required wirings of common voltage electrodes uniformly on the display panel.

As to **claim 11**, all of the claim limitations have already been discussed with respect to the rejection of claim 2.

As to **claim 12**, all of the claim limitations have already been discussed with respect to the rejection of claim 3.

As to **claim 13**, all of the claim limitations have already been discussed with respect to the rejection of claim 4.

As to **claim 14**, all of the claim limitations have already been discussed with respect to the rejection of claim 5.

As to **claim 15**, all of the claim limitations have already been discussed with respect to the rejection of claim 6.

As to **claim 16**, all of the claim limitations have already been discussed with respect to the rejection of claim 7.

As to **claim 17**, all of the claim limitations have already been discussed with respect to the rejection of claim 8.

Allowable Subject Matter

7. **Claims 9 and 18** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (572) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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04/30/2007

- s.m.


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